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| --- | --- | --- | --- |
| Steady-State Equilibrium | Continuous inputs & outputs of energy & matter; the system remains more or less constant; small short term changes to occur |  | After a disturbance an ecosystem will go back to the original ecosystem  Prey numbers increase which causes predator numbers to increase. The prey numbers drop and so do the predator numbers. It goes back and forth. |
| Static Equilibrium | No change occurs; does not occur in living systems; when change occurs, a NEW equilibrium is found |  | A pile of rocks |
| Stable Equilibrium | A system will return to the same equilibrium after a disturbance |  | After a disturbance an ecosystem will go back to the original ecosystem |
| Unstable Equilibrium | After a disturbance, a system will return to a NEW equilibrium |  | Climate change maybe causing the Earth to find a new equilibrium. |

*1.1.5 Explain the nature of equilibria*

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| --- | --- |
| Positive Feedback | Negative Feedback |
| The system is reinforced and strengthened | The system is dampened, neutralized, or counteracted. This causes the system to self-regulate |
| In some developing countries poverty causes illness and contributes to poor standards of education. In the absence of knowledge of family planning methods and hygiene, this contributes to population growth and illness, adding further to the causes of poverty | Your body temperature starts to rise above 37C because you are walking in the tropical sun and the air temperature is 45C. The sensors in your skin detect that your surface temperature is rising so you start to sweat and go red as blood flow in the capillaries under your skin increases. Your body attempts to loose heat. |
| Higher temperatures may cause more evaporation, which leads to more water vapor in the atmosphere. Water vapor is a greenhouse gas so more heat is trapped in the atmosphere which will cause additional warming. | A thermostat in a central heating system is a device that can sense the temperature. It switches a heating system on when the temperature decreases to a predetermined level, and off when it rises to another warmer temperature. So a room, a building, or a piece of industrial plant can be maintained within narrow limits of temperature |
| Since glaciers and ice are white, some sunlight is reflected back into space. Since it is reflected back into space it does not cause the earth to warm. As the earth warms, the ice melts leaving the darkness of the ocean. The dark ocean absorbs more light and reflects less light back into space. As the ice melts more and more ocean is made visible and the more heat that is absorbed. |  |

*1.1.6 Define and explain the principles of positive feedback and negative feedback*